

Water Quality Restoration Plan

**Grants Pass-Rogue River Watershed
HUC 1710030804**

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August 2011

Water Quality Restoration Plan
Southern Oregon Coastal Basin
Middle Rogue Subbasin
Grants Pass- Rogue River Watershed

Bureau of Land Management (BLM), Medford District Office
 Grants Pass Resource Area

Grants Pass-Rogue River Watershed at a Glance	
Hydrologic Unit Code	1710030804
Watershed area/ownership	Total: 53,809 acres BLM: 12,482 acres Private: 40,677 acres State: 627 acres Local Government: 23 acres
303(d) Stream miles assessed	20.6 Total miles, 0.6 BLM miles
303(d) listed parameters	Temperature, fecal coliform
Beneficial Uses	Salmonid rearing, migration and spawning; cold water habitat; livestock watering; water supply; recreation
Known Impacts (human)	Timber harvest, roads, diversions, urban development, agriculture
Natural factors	Soils: Serpentine soils – poor growing conditions and low infiltration
Water Quality limited streams	<i>Savage Creek</i> —Mouth to mile 4.8 <i>Rogue River</i> —Mouth to mile 124.8

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Statement of Purpose

Water quality standards are established to protect beneficial uses of the State's waters. Beneficial uses are assigned by basin in the Oregon Administrative Rules for water quality. Examples of beneficial uses include:

domestic water supply	fishing
industrial water supply	boating
irrigation water contact	recreation
livestock watering	aesthetic quality
fish and aquatic life	hydropower
wildlife and hunting	commercial navigation and transportation

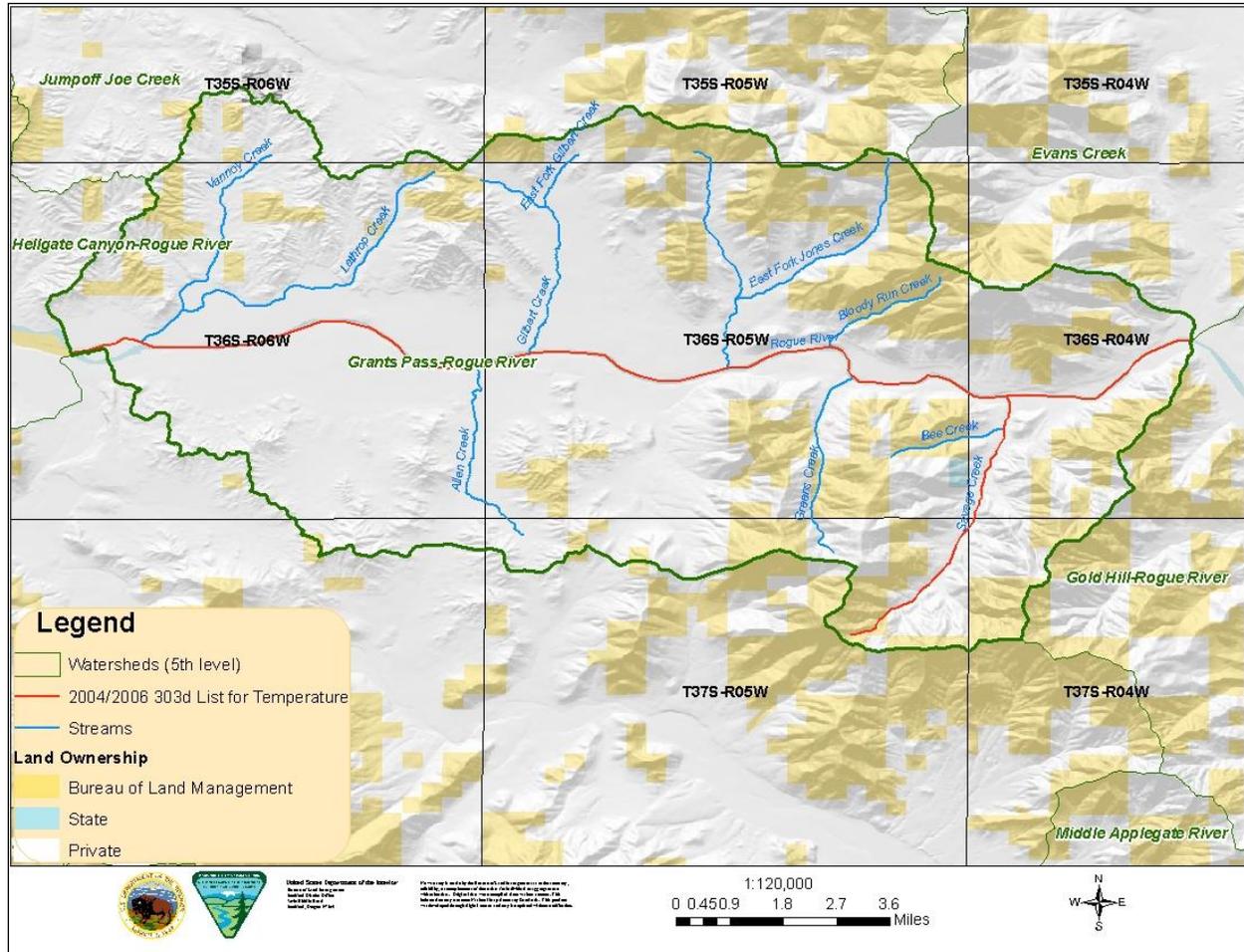
The Water Quality Restoration Plan (WQRP) for the Grants Pass-Rogue River Watershed was prepared to fulfill a requirement of Section 303(d) of the Clean Water Act. It is organized as per part 4 of the Northwest Forest Plan Temperature TMDL Implementation Strategies (USFS, BLM 2005). This plan covers all the Bureau of Land Management (BLM)-administered lands within the Grants Pass-Rogue River Watershed (Figure 1), Hydrologic Unit Code 1710030804. This WQRP complies with the Water Quality Management Plan (WQMP) within the Rogue River Basin TMDL, (ODEQ 2008).

This WQRP addresses all listings on the Department of Environmental Quality's (DEQ's) 2004/2006 303(d) list for the plan area. The DEQ 2004/2006 303(d) list is the most recent listing of impaired waters in Oregon. Within the plan area, the Rogue River and Savage Creek have been placed on the State of Oregon's 303(d) list for failure to meet the water temperature criteria outlined below. The Rogue River is also on the 303(d) list for fecal coliform.

Watershed Characterization

The Grants Pass-Rogue River Watershed is a 53,809 acre (84 mi²) watershed containing two 6th field subwatersheds (Gilbert Creek and Savage Creek) and twenty-four 7th field drainage areas including Allen Creek, Gilbert Creek, Greens Creek, Jones Creek, Sand Creek, Savage Creek, Vannoy Creek and unnamed face drainages. There are no key watersheds in the Grants Pass-Rogue River Watershed.

Map 1. 2004/2006 303(d) Temperature-Listed Streams in the Grants Pass-Rogue River Watershed



Land Ownership

Land ownership is mostly a mix of private and BLM (Figure 1), with private being the dominant ownership. The BLM, Medford District administers 23 percent of the lands and private ownership totals 76 percent. The BLM parcels are within a checkerboard of ownership with some small contiguous areas in northeast portion of the analysis area.

BLM land allocation within the plan area includes Matrix and Riparian Reserves. Objectives and management actions/directions for these land allocations are found in the Medford District Record of Decision and Resource Management Plan (USDI 1995: pp. 24-40 and 56-62).

Major land uses in the area include urban development and agriculture. Early European inhabitation resulted in logging of the surrounding hills and agricultural development of the valley bottoms. The watershed has historically experienced low-severity fires.

Climate

The Grants Pass-Rogue River Watershed has a Mediterranean climate with cool, wet winters and warm dry summers. Annual precipitation in the 5th field watershed is variable, ranging between approximately 29 and 39 inches, with the majority of precipitation falling between December and March. Approximately 2.5% of the Grants Pass-Rogue River Watershed is within the Transient Snow Zone (TSZ) and is found entirely in the southeast portion of the watershed. The rest of the watershed is in the rain-dominated precipitation zone.

Streamflow

Streamflows in the Grants Pass-Rogue River Watershed fluctuate with seasonal variation of precipitation. One of the main hydrological characteristics of the Grants Pass-Rogue River Watershed is the very low stream flows in tributary streams during the late summer and early fall. Moderate to high flows generally occur from mid-November through May. As the watershed is below 3,500 feet in elevation, snowpack rarely contributes to the late spring and summer water flows. As a result, stream flows are often less than 5 cfs during the late summer and early fall. Storm events, snowmelt, and the Lost Creek Dam significantly affect the flows of the Rogue River.

There are areas of serpentine soil found in the northeast and southeast portions of the Grants Pass-Rogue River Watershed, mostly found in the Savage Creek Subwatershed. Serpentine soils result in streamflows that are particularly flashy, rapidly rising and falling with the onset and cessation of rainfall. Soils that are typically deeper and have a greater vegetative cover have streamflows that are not as responsive to precipitation. Within the areas of serpentine soil, seeps and springs surface along bedrock planes. While the seeps and springs do not contribute to baseflows, they provide important sources of water for unique wetlands. There are 50 known springs in the Grants Pass-Rogue River Watershed, although there are likely more, found in the northeast and southeast portions of the watershed, mostly found in the Savage Creek Subwatershed.

Consumptive use for agriculture and domestic supplies has reduced summer surface water flows in Grants Pass-Rogue River Watershed. According to the Oregon Department of Water Resources, there are 1,354 water rights in the Grants Pass-Rogue River Watershed. Exacerbating the effects of surface water diversions on baseflows are groundwater withdrawals for domestic and irrigation use. While not quantified, numerous wells in the watershed pump groundwater for domestic, landscaping, and irrigation use. Often water withdrawn from wells is hydrologically connected to the surface water. In these instances, ground water is removed that would have flowed subsurface, discharging into streams.

As a result of the low flow conditions, many of the subwatersheds were listed as water quality limited due to flow modification. In 2002, the flow modification parameter was dropped from the 303(d) list for requiring a TMDL, as reduced flows are not considered a pollutant. However,

streams with reduced flows are more susceptible to increases in stream temperatures, especially urbanized streams that lack a riparian buffer.

Channel Condition

There are approximately 523 miles of streams in the Grants Pass-Rogue River Watershed. They range from forested, undeveloped reaches to urbanized streams. The headwaters are generally steep and fast flowing. First order streams comprise approximately 60% of the watershed; second and third order streams comprise about 32%. The remaining 8% is comprised of the 4th and 5th order streams. Past management in the riparian areas has reduced the amount of large woody debris in all of these streams.

Moderate peak flow (2-5 year flood return interval) results from intense winter rainstorms. Flood events create widespread bank erosion and channel adjustment in the lower gradient floodplain reaches. Riparian vegetation removal, urbanization and channel straightening to the floodplain areas have greatly reduced the function of the floodplain to dissipate flood energy. Consequently, channel banks are the primary energy dissipater, resulting in accelerated bank erosion. Bank erosion has led to channel widening, which increases water surface area. Associated with a greater water surface area is an increase in solar radiation input into the stream, leading to increased water temperatures.

The Middle Rogue Watershed Council has been performing stream restoration projects on private land within the Grants Pass-Rogue River Watershed, including placement of large wood and boulders, removal of barriers and riparian planting.

Riparian Condition

Primary activities affecting water quality in the Grants Pass-Rogue River Watershed are riparian vegetation removal, residential and agricultural development, channel widening, and water withdrawals (ODEQ 2008). Approximately 9,000 acres of the Grants Pass-Rogue River Watershed is included in the Grants Pass Urban Growth Area (GPUGA). Land use patterns within the GPUGA have drastically impacted a large portion of the valley bottom and some of the surrounding foothills. Floodplains in the lower gradient valley bottoms have been cleared for agricultural production and development resulting in a narrow strip of hardwood dominated vegetation along the stream channels. As a result, some of the riparian trees are not tall enough to shade the streams adequately. In the moderate to high gradient reaches, rotational harvest on private lands and past BLM forest practices have reduced distribution of mature riparian forest stands. Riparian harvest, agricultural development, and residential housing along riparian areas have created a mosaic pattern of vegetation. Water flowing through such areas is exposed to increased solar radiation, leading to elevated temperatures.

According to the DEQ's *Rogue River Basin TMDL* (ODEQ 2008), effective shade targets for the Rogue River are substantially below the system's potential when the dominant provider of shade is vegetation. Since the implementation of the Northwest Forest Plan in 1994, the riparian vegetation on BLM-managed lands have developed to at or near stream shade potential. Serpentine soils, known as low productivity soils, along the East Fork Jones Creek, East Fork Gilbert Creek and upper Savage Creek are responsible for the low existing and potential shade. The majority (>60%) of the Gilbert Cr 6th field is classified as non-forest, which would result in less naturally forested and thus less riparian shade. Non-forest includes chaparral and mixed

confer/oak woodlands. In the Savage Cr 6th field, which is dominantly forested, very little timber harvest activities have occurred in the past 30 years although the Grants Pass area has experienced a population and development growth spurt over the past 10 years. This development has occurred in the rural interface, which has reduced tree stands. Bee Creek, Jones Creek, Bloody Run Creek Fruitdale Creek, Vannoy Creek and Gilbert Creek have low riparian cover resulting in elevated stream temperatures.

Many riparian stands, both at and below shade potential, are overstocked due to past activities and fire suppression. These stands exhibit lower growth rates, reduced stand resiliency, and higher fire risk. The Grants Pass Resources Area actively investigates riparian conditions to identify riparian stands that would benefit from thinning or underburning. Benefits include increased growth rates, stand complexity, as well as reduced fire danger.

As a consequence of the high amount of urbanization, the Grants Pass-Rogue River Watershed has a large number of roads. The overall road density is 1.67 mi/mi² but there are areas, predominantly along the major highway corridors and towns, which have much higher densities.

Aquatic Wildlife Species

There are four species of aquatic wildlife found in the Grants Pass-Rogue River Watershed: coho salmon, chinook salmon, steelhead trout and Coastal Cutthroat trout. Steelhead and coho are found in some tributaries while the cutthroat and chinook are only in the Rogue River.

Bacteria Standard

Water contact recreation is the most sensitive beneficial use addressed in the Rogue River Basin Bacteria TMDL.

The current Oregon water quality bacteria standard is found in chapter 340, division 41, section 9 of the Oregon Administrative Rules (OAR) (ODEQ 2011). The following is an excerpt from the standard that applies to nonpoint sources in the Grants Pass-Rogue River Watershed.

(1) Numeric Criteria: Organisms of the coliform group commonly associated with fecal sources (MPN or equivalent membrane filtration using a representative number of samples) may not exceed the criteria described in paragraphs (a) and (b) of this paragraph:

(a) Freshwaters and Estuarine Waters Other than Shellfish Growing Waters:

(A) A 30-day log mean of 126 E. coli organisms per 100 milliliters, based on a minimum of five (5) samples;

(B) No single sample may exceed 406 E. coli organisms per 100 milliliters.

(3) Animal Waste: Runoff contaminated with domesticated animal wastes must be minimized and treated to the maximum extent practicable before it is allowed to enter waters of the State.

(4) Bacterial pollution or other conditions deleterious to waters used for domestic purposes, livestock watering, irrigation, bathing, or shellfish propagation, or otherwise injurious to public health may not be allowed.

(10) Water Quality Limited for Bacteria: In those water bodies, or segments of water bodies identified by the Department as exceeding the relevant numeric criteria for bacteria in the basin standards and designated as water-quality limited under section 303(d) of the Clean Water Act, the requirements specified in section 11 of this rule and in OAR 340-041-0061 (12) must apply.

(11) In water bodies designated by the Department as water-quality limited for bacteria, and in accordance with priorities established by the Department, development and implementation of a bacteria management plan may be required of those sources that the Department determines to be contributing to the problem. The Department may determine that a plan is not necessary for a particular stream segment or segments within a water-quality limited basin based on the contribution of the segment(s) to the problem. The bacteria management plans will identify the technologies, best management practices and/or measures and approaches to be implemented by point and nonpoint sources to limit bacterial contamination. For nonpoint sources, the bacteria management plan will be developed by designated management agencies (DMAs) which will identify the appropriate best management practices or measures and approaches.

The Rogue River within the Grants Pass-Rogue River Watershed is on DEQ's 2004/2006 303(d) list for exceeding fecal coliform standards (Table 1). The Rogue River does not cross any BLM-administered lands within the watershed.

E. Coli Sources

The pollutant of concern is fecal-related microorganisms. Fecal coliform bacteria are produced in the guts of warm-blooded vertebrate animals and found in the feces of humans and other warm-blooded animals. They indicate the presence of pathogens that cause illness in humans. *E. coli* is a subset of fecal coliform bacteria. Fecal bacteria sources include wildlife, livestock waste, failing septic systems, wastewater treatment plant malfunctions, and rural residential and urban runoff (ODEQ 2008). Potential nonpoint sources of bacteria from BLM-administered lands may include wild animal feces and inadequate waste disposal by dispersed recreational users. There are no grazing allotments within the Grants Pass-Rogue River Watershed.

There is little data locally that indicate the potential input of bacteria from forest areas. Bacterial TMDL studies in the Willamette and North Coast Basins have indicated that background levels coming from forested areas are well below standards. The *E. coli* sample sites used in the Rogue River Basin TMDL were located well-below BLM-administered lands.

E. Coli TMDL Load Allocations

The criteria that apply to nonpoint sources are a log mean of 126 *E. coli*/100 ml in 30 days and 406 *E. coli*/100 ml as a daily maximum. The surrogate measure is the percent reduction target in bacterial loading (ODEQ 2008).

Temperature Standard

The Oregon water quality temperature below applies to the Grants Pass-Rogue River Watershed and is found in OAR 340-041-0028 (4) (a-c) (ODEQ 2005):

(4) Biologically Based Numeric Criteria. Unless superseded by the natural conditions criteria described in section (8) of this rule, or by subsequently adopted site-specific criteria approved by EPA, the temperature criteria for State waters supporting salmonid fishes are as follows:

(a) *The seven-day-average maximum temperature of a stream identified as having salmon and steelhead spawning use on subbasin maps and tables set out in OAR 340-041-0101 to OAR 340-041-0340: Tables 101B, and 121B, and Figures 130B, 151B, 160B, 170B, 220B, 230B, 271B, 286B, 300B, 310B, 320B, and 340B, may not exceed 13.0 degrees Celsius (55.4 degrees Fahrenheit) at the times indicated on these maps and tables;*

(b) *The seven-day-average maximum temperature of a stream identified as having core cold water habitat use on subbasin maps set out in OAR 340-041-101 to OAR 340-041-340: Figures 130A, 151A, 160A, 170A, 220A, 230A, 271A, 286A, 300A, 310A, 320A, and 340A, may not exceed 16.0 degrees Celsius (60.8 degrees Fahrenheit);*

(c) *The seven-day-average maximum temperature of a stream identified as having salmon and trout rearing and migration use on subbasin maps set out at OAR 340-041-0101 to OAR 340-041-0340: Figures 130A, 151A, 160A, 170A, 220A, 230A, 271A, 286A, 300A, 310A, 320A, and 340A, may not exceed 18.0 degrees Celsius (64.4 degrees Fahrenheit);*

Element 1: Condition Assessment and Problem Description

The Oregon Department of Environmental Quality (ODEQ) gathers and assesses water quality data for streams in Oregon and maintains a list of streams (the 303(d) list) that do not meet water quality standards. These streams are considered water quality limited, meaning that beneficial uses of the stream are adversely affected by water quality conditions. In this HUC, the Grants Pass-Rogue River Watershed has three stream segments listed on the 2004/2006 303(d) list. Table 1 displays the stream, water quality parameter not meeting standards, and beneficial use effected. Savage Creek is the only 303(d) listed stream segment that crosses BLM-managed lands within the watershed.

Table 1 Grants Pass-Rogue River Watershed 303(d) listed streams

Stream Segment	Miles of Stream	Parameter
Savage Creek, Mouth to mile 4.8	4.8	Summer Temperature
Rogue River, Mile 94.9 to Mile 110.7	15.8	Summer Fecal coliform
Rogue River, Mouth to Mile 124.8	124.8	Year Around Temperature

In 2008, the DEQ issued the Rogue River Basin TMDL. The following excerpt is taken from Chapter 2:

2.7.2 Effective Shade Targets

The Rogue River Basin Temperature TMDL incorporates other measures in addition to “*daily loads*” to fulfill requirements of the Clean Water Act §303(d). Although a loading capacity for heat energy is derived (e.g. kilocalories), it is of limited value in guiding management activities needed to solve identified water quality problems. In addition to heat energy loads, this TMDL allocates “*other appropriate measures*” (or surrogate measures) as provided under EPA regulations (40 CFR 130.2(i)).

Effective shade is the surrogate measure that translates easily into solar heat load. It is simple to measure effective shade at the stream surface using a relatively inexpensive instrument called a Solar Pathfinder™.

The term ‘shade’ has been used in several contexts, including its components such as shade angle or shade density. For purposes of this TMDL, effective shade is defined as the percent reduction of potential daily solar radiation load delivered to the water surface. The role of effective shade in this TMDL is to prevent or reduce heating by solar radiation and serve as a linear translator to the loading capacities.

Unless otherwise stated within this chapter, the applicable nonpoint source load allocations for Rogue River Basin streams are based upon potential effective shade values presented in this section and the human use allowance (0.04°C cumulative increase at the point of maximum impact).

Most streams simulated have no assimilative capacity, which translates into a zero heat load allocation for nonpoint sources. When a stream has assimilative capacity, nonpoint and point sources may receive allocations greater than background.

In 1997, the DEQ found maximum water temperatures above 23°C in Savage Creek exceeding the 17.8°C rearing maximum, leading to the 303(d) listing. A reduction of both baseflow and riparian vegetation in these are primarily responsible for increased water temperatures. Reduced volumes of water are more susceptible to warming and reduced vegetative cover increases solar radiation input. The current average shade on the 0.6 mile of Savage Creek that crosses BLM-managed land is 97 percent and the target shade is 97 percent (ODEQ 2004).

From 1998 to 2003, the DEQ measured seven-day average maximum water temperatures on the Rogue River exceeding 18°C for 115 days (Appendix A). In 2003, the DEQ commissioned a private contractor to conduct airborne thermal infrared (TIR) remote sensing surveys of selected streams in the Rogue River Basin in Oregon in order to characterize the thermal regime of these streams. Between Savage Rapids Dam and river mile 92.5, water temperatures in the Rogue River increased by approximately 4.7°C. Near the town of Grants Pass (river mile 102.1), the longitudinal profile shows a quick increase in the heating rate. Image analysis did not reveal any surface water or point source inflows that might explain the observed thermal response. Between river mile 95.3 and 92.5, the heating rate appeared to increase with a 2.0°C gain over this segment. All tributary inflows sampled had surface temperatures warmer than the Rogue

River. In 2009, the Savage Rapids dam was removed and it is too early to determine the effect on stream temperatures.

Element 2: Goals and Objectives

For BLM-administered lands within the Grants Pass-Rogue River Watershed, the primary goal within riparian reserves is the maintenance and long-term restoration of riparian ecosystems as identified in the Northwest Forest Plan Aquatic Conservation Strategy (ACS) objectives. Specific project goals include:

1. Manage riparian areas within one to two tree-heights of all streams to benefit riparian health and aquatic habitat. Management includes preserving current conditions (protective) and silvicultural treatments to increase stand vigor and resiliency (proactive).
2. Manage BLM administered riparian lands to reach their shade potential.
3. Maintain/improve riparian reserve health on BLM managed lands to maximize large wood recruitment into the channel and riparian environments. The instream wood will benefit downstream channel stability and improve aquatic habitat conditions. Maintain late-seral conditions where they currently exist. In early, mid-seral, and mature stands that lack structural complexity, treatments would accelerate stand development into late-successional/mature structure (i.e. large trees, snags, down wood, species diversity and hardwood retention).
4. Return stand density and fuel loads to range of natural variability to reduce potential for stand replacement fire events.

To accomplish this, the Northwest Forest Plan (NWFP) (USDA, USDI 1994) and the Medford District Resource Management Plan (RMP) (USDI 1995) provide management guidance to maintain or improve riparian health. The most relevant direction in the NWFP is included in the Aquatic Conservation Strategy (ACS) objectives; the ACS was developed to restore and maintain the ecological health of watersheds and to protect salmon and steelhead habitat on lands within the range of Pacific Ocean anadromy. The ACS contains specific water quality objectives that protect the beneficial uses identified in the state's water quality standards. Riparian reserves, key watersheds, watershed analysis, and watershed restoration components of the ACS are designed to operate together to maintain and restore the productivity and resiliency of riparian and aquatic ecosystems. In addition to the ACS, *the Standards and Guidelines for Management of Habitat for Late-Successional and Old-Growth Forest Related Species within the Range of the Northern Spotted Owl* (1994) describe land allocations and specific standards and guidelines (S&Gs) for managing these land allocations. These S&Gs effectively serve as Best Management Practices (BMPs) to prevent or reduce water pollution further contributing to goals of Clean Water Act compliance.

Element 3: Proposed Management Measures

Management and protection of riparian zones will occur at two levels: programmatic and project. The Medford RMP contains BMPs that are important for preventing and controlling to the "maximum extent practicable" non-point source pollution and achieving Oregon water quality standards.

Programmatic: The Northwest Forest Plan standards and guidelines will be used to meet the goals of the Grants Pass-Rogue River Watershed Water Quality restoration Plan including:

- Stream Temperature – Shade Component
Aquatic Conservation Strategy: B9 – B11, C30
Riparian Vegetation: B31
Riparian Reserves: B12 to B17
Watershed Restoration: B30
- Stream Temperature – Channel Form
Aquatic Conservation Strategy: B9 – B11, C30
Riparian Vegetation: B31
Riparian Reserves: B12 to B17
Watershed Restoration: B30
Roads: B19, B31 to B33

The riparian reserve width for the fish-bearing streams in the Grants Pass-Rogue River Watershed is equal to twice the site potential tree height (350 feet) on each side of the stream. For intermittent and non-fish bearing streams the riparian reserves is equal to the site potential tree height (175 feet) on each side.

Project: The second level of management and protection occurs at the project planning level. The project planning area is usually at the fifth field watershed scale. A team of specialists including fish biologists, hydrologists, botanists and silviculturalists examine watershed analysis conclusions and conduct field surveys to determine the most appropriate actions necessary to improve and/or maintain riparian health and protection. These actions typically include developing silvicultural prescriptions to improve stand vigor, decommissioning roads, planting, and designing site specific BMPs.

The Northwest Forest Plan (NWFP) Temperature TMDL Implementation Strategies (USDA, USDI 2005) provides specific guidance for silvicultural practices within riparian reserves. Shade curves were computed based on stream width, orientation, and topography factors and show the required minimum no-cut buffers necessary to maintain and restore site-potential riparian shade. The shade curves and field surveys will ensure maintenance of riparian stands providing primary shade (those stands that provide shade between the hours of 1000 and 1400).

Objectives that will guide proposed treatments include:

- Retain vegetation providing primary shade;
- Silvicultural treatments in the riparian reserve can be described as thinning from below treatments, with the intention of leaving the larger and healthier trees in the overstory. Retain vegetation responsible for providing shade to the active channel. The stocking level would provide adequate future recruitment of Large Woody Debris (LWD) to exceed the desired ODFW (1997) habitat benchmarks.

Element 4: Timeline for Implementation

The major provisions of this plan have already been implemented. Protection of riparian areas along all streams on BLM-administered lands has been ongoing since the NWFP became effective in 1994. Inherent in the implementation is the passive restoration of riparian areas that ensued because of the riparian reserve buffers/allocation. Implementation of active restoration activities beyond the inherent passive riparian restoration occurs with watershed analyses and site-specific projects.

Implementing specific activities designed to improve riparian conditions requires analysis under the National Environmental Policy Act (NEPA) and will occur following the landscape level planning.

Stream temperature recovery is largely dependent on vegetation recovery. Actions implemented now will not begin to show returns in terms of reduced stream temperatures or improved aquatic habitat for a number of years. While the BLM will manage their lands to meet shade requirements, as per the TMDL and MOU, water temperature decreases will be dependent on non-BLM land management actions, due to the mixed ownership in the Grants Pass-Rogue River Watershed, especially in the lower reaches.

Riparian areas on BLM-managed lands are generally in better condition than private but still have been negatively impacted by past management activities. Streamside shade is expected to increase with passive restoration (riparian reserves) leading to improvement of past riparian harvest units combined with active riparian management to improve health, resiliency and growth rates. Effective shade will be lower in areas that have serpentine soils or are in the areas considered non-forested.

Element 5: Identification of Responsible Participants

The BLM signed a Memoranda of Understanding (MOU) with ODEQ (USDI ODEQ 2011) that provides a framework for effective cooperation on programs and projects to pursue the shared goal of attainment of state water quality standards. To that end, the MOU includes provisions for implementation that satisfy State and Federal point and non-point source pollution control requirements, develops a common understanding of water quality protection and restoration, and constitutes the basis for continuing formal designation of the BLM as a Designated Management Agency.

The BLM Grants Pass Field Manager is responsible for ensuring this WQRP is implemented, reviewed, and amended as needed. This official is responsible for all WQRPs for lands under their jurisdiction. The Field Manager will ensure coordination and consistency in plan development, implementation, monitoring, review, and revision. The manager will also ensure priorities are monitored and revised as needed and review and consider funding needs for this and other WQRPs in annual budget planning.

Element 6: Reasonable Assurance of Implementation

The Oregon/Washington State Director approved the ROD and associated Medford District Resource Management Plan on April 14, 1995. The ROD approves the BLM's decisions for managing 870,000 acres in portions of Josephine, Jackson, Douglas, Curry, and Coos counties.

Implementation and monitoring of the ACS and use of the Temperature Implementation Strategies' logic and tools provide reasonable assurance that watersheds under the direction of the NWFP will move towards attainment of water quality standards and beneficial use support. Implementation and adoption of the MOU with DEQ also provide assurances that water quality protection and restoration on lands administered by the BLM will progress. Additionally, adherence to BMPs developed through the NEPA process and project design guidelines instituted for Threatened & Endangered species protection further provides reasonable assurance of progress toward water quality improvement. However, BLM acknowledges that periodic review of the Temperature Implementation Strategies and TMDLs is necessary to provide the assurance that goals and objectives are being met.

Element 7: Monitoring and Evaluation

Monitoring will be used to ensure that decisions and priorities conveyed by BLM plans are being implemented, to document progress toward attainment of state water quality standards, to identify whether resource management objectives are being attained, and to document effectiveness of management actions. If monitoring indicates that sufficient progress toward the goals contained in this plan are not being made, the goals and activities will be revisited and changes made as necessary to the action plan to assure attainment of water quality standards.

The primary objective of this WQRP is to increase stream shade, reduce sedimentation, and improve aquatic habitat. Due to the mixed ownership in the Grants Pass-Rogue River Watershed, attainment of the water temperature standard requires multi-ownership participation and commitment to improve riparian function.

Researchers at the Forest Service Pacific Northwest Experiment station are assessing the effectiveness of the management actions directed by the NWFP to improve water quality. This effort is monitoring the passive restoration measures implemented in this WQRP.

Element 8: Public Involvement

Many of the elements contained in this WQRP derived from existing land use planning documents such as the Medford RMP and the NWFP. These documents received broad based public comment during scoping prior to development of alternatives and during public appeal of both documents. Both documents also received numerous responses to the Draft Environmental Impact Statement that were published for review, prior to development of the Final Environmental Impact Statements and Record of Decisions.

The Oregon Department of Environmental Quality has lead responsibility for creating TMDLs and WQMPs to address water quality impaired streams in Oregon. This Water Quality

Restoration Plan will be provided to DEQ for incorporation into the Rogue River Basin WQMP.

Additionally, the NEPA process requires public involvement prior to land management actions, providing another opportunity for public involvement. During this process, BLM sends scoping letters and schedules meetings with the public. The public comment period ensures that public participation is incorporated into the decision making process.

Element 9: Maintenance of Effort over Time

The conditions leading to water quality limitations and 303(d) listing have accumulated over many decades. Management measures to address these factors will be carried out over an extended period. Furthermore, once restorative actions and protection practices achieve desired results, continued vigilance will be required to maintain water quality standards.

Northwest Forest Plan and Federal Land Management Plans

The NWFP and the Medford Resource Management Plan are ongoing federal land management plans. The NWFP became effective in 1994. The RMP was implemented in 1995 and covers a period of approximately 10 years or until the next RMP revision. Federal law requires RMP and Forest Plan implementation.

Water Quality Restoration Plan

The Medford District BLM, working in partnership with the DEQ, is responsible for ensuring the WQRP is implemented, reviewed, and amended as needed. This includes the following:

1. Review of the responsible agency's land treatments, verifying consistency with plans.
2. Promotion of on-going communication, financial support, and partnerships for implementing priority projects.
3. Continue efforts to explore revised or additional management measures based on results of monitoring activities and other sources of information.
4. As additional information becomes available and techniques are improved, continue to improve and revise cost/benefit estimates.

Element 10: Costs and Funding

Active restoration can be quite costly, depending on the level of restoration. The following are estimated average costs of typical restoration activities (implementation only, does not include planning costs):

Riparian thinning	\$2,000 per acre
Instream LWD Placement	\$10,000 -20,000 per mile
Culvert Replacement	\$50,000 -80,000 per structure

There are several sources of funding for restoration activities. This includes congressionally appropriated budget line items for restoration and grants.

Budget Line Items for Restoration

The Grants Pass Resource Area will make every attempt to secure funding for restoration activities but it must be recognized that the federal agencies have political and economic realities. Federal activities are subject to public and legal review prior to implementation; legal clearance is necessary prior to implementation. Historically, budget line items for restoration are a fraction of the total requirement. Grants may prove to be an increasingly important mechanism for funding restoration but funds are subject to availability, eligibility and approval of external parties.

Literature Cited

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Appendix A

ODEQ 2004/2006 303(d) listed streams in the Rogue River-Grants Pass watershed

Name LLID River Mile	Parameter	Season	Criteria	Beneficial Uses	Status	Assessment: Year Action	Supporting data
Savage Creek 1232199/424196 0 to 4.8	Temperature	Summer	Rearing: 17.8 C	Anadromous fish passage Salmonid fish rearing	303(d)	1998 Added to database	Previous Data: 1997 data shows exceedance of temperature criteria, 73.1°F
Rogue River 1244292/424210 94.9 to 110.7	Fecal Coliform	Summer	Fecal coliform log mean of 200 organisms per 100 ml; no more than 10% > 400 per 100 ml	Water contact recreation	303(d)	1998 Added to database	Previous Data: DEQ Data (Site 402088; RM 86.6): 12% (3 of 26) Summer values exceeded fecal coliform standard (400) with a maximum value of 1100 between WY 1986 - 1995.
Rogue River 1244292/424210 0 to 124.8	Temperature	Year-round (non- spawning)	Salmon and trout rearing and migration: 18.0 degrees Celsius 7- day-average maximum	Salmon and trout rearing and migration	Cat 5: Water quality limited, 303(d) list	2004 Added to database	2004 Data: [DEQ/BLM - Medford] LASAR 28145 River Mile 65.2: From 6/16/1998 to 9/19/2003, 115 days with 7- day-average maximum > 18°C.